

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NORTH DAKOTA
SOUTHEASTERN DIVISION

ALIEN TECHNOLOGY CORPORATION,)
v.)
Plaintiff,)
INTERMEC, INC., INTERMEC) Case No. 3:06-cv-51
TECHNOLOGIES CORPORATION,)
and INTERMEC IP CORP.,)
Defendants.)

**Order Denying Summary Judgment of Infringement and
Non-infringement for U.S. Patent 6,812,841**

Plaintiff Alien Technology Corporation ("Alien") and Defendants (collectively "Intermec") have filed cross motions for summary judgment on the issue of infringement concerning U.S. Patent No. 6,812,841 (the '841 Patent).¹ The Court, having considered all of the briefs and documents filed by the parties, now issues this memorandum opinion and order.

SUMMARY OF DECISION

Literal infringement requires that the accused process or device literally embodies every element of the patent claim. A finding of infringement is a question of fact. Alien argues that Intermec has not shown Alien's accused tags include "state information" that determines the output of a digital state machine and that its tags do not execute at least one command in accordance with the state information. Intermec counters that

¹ Alien's motion for summary judgment of non-infringement is found at doc. #508, and Intermec's motion for summary judgment of infringement is found at doc. #545.

the protocol under which Alien's tags operate includes "state information" that determines the output of the digital state machine, as the Court has construed those elements, and that this protocol also contains a command meeting the functionality of the '841 patent. In order for a court to find infringement or non-infringement as a matter of law, no reasonable jury could return a verdict for the non-moving party. After viewing the facts in a light most favorable to each party as non-movant, the Court cannot conclude that a reasonable jury could not return a verdict for one party or the other. Therefore, the '841 Patent presents genuine issues of material fact, and summary judgment is inappropriate.

BACKGROUND

1. The '841 Patent and Claim Construction

The '841 Patent discloses a tag that contains a "state holding cell" to remedy the problem encountered when a tag moves out of a reader's range in the middle of a communication between the two. '841 Patent, 2:28-35. Quite often, a passive tag is moving while communicating with the reader. If the tag moves out of the reader's range in mid-communication, the tag loses power and resets back to its original state. Id. 1:55-59. Once power is restored, the reader must repeat the commands and duplicate the work already done between the two. Id. 2:10-12. The state holding cell stores "state information" about what state the tag was in before the loss of power and restores the tag to that state when power is returned. Id. 2:28-35. According to claim 1

of the '841 Patent, the state information is provided by an analog circuit that has received an analog signal or command from the reader. Id. 6:25-29.

Intermec alleges Alien's tags infringe claims 1, 9, and 21 of the '841 Patent. The parties' dispute on summary judgment concerns the following underlined phrases of the elements of the '841 Patent, as stated in claim 1:

[2] an analog circuit coupled to said RF front end and adapted to recover analog signals from said received interrogating RF signal, said analog circuit providing state information defining a desired state of said RFID transponder corresponding to said analog signals;

[3] a digital state machine coupled to said analog circuit and adapted to execute at least one command in accordance with said state information;

[4] a memory coupled to said digital state machine and adapted to store and retrieve digital data responsive to said at least one command executed by said digital state machine[;]

...

[6] a state holding cell coupled to said digital state machine and being adapted to maintain said state information during a loss in power provided by said power capacitor due to lapse in receipt of said interrogating RF signal by said RF front end.

'841 Patent, claim 1 (emphasis added).

At the Markman hearing, the parties offered differing constructions of the term "state information" and the phrase "state information defining a desired state of said RFID transponder." Alien argued the term and phrase should be jointly construed and limited to operating states so that it would mean "Data that defines a specific tag operating state which is

necessary to determine the tag's response to the reader command." Doc. #453, at 14. Intermec argued "state information" was not limited to operating states and should be construed separately from the disputed phrase.

Ultimately, the Court construed "state information" to mean "information that can be used to determine the output of a digital state machine," the disputed phrase as a whole to mean "information obtained that determines the output of the digital state machine." (Doc. #466, at 38). The Court was not asked to construe the command element.

2. Alien's Accused Process

Intermec alleges Alien's Higgs2-based tags infringe claims 1, 9, and 21 of the '841 Patent (doc. #546, at 1). Alien's Higgs2-based tags practice the basic inventory process described in the EPCglobal, Inc. Class-1 Generation-2 UHF RFID Protocol for Communications at 860 MHz-960 MHz ("the Protocol" found at doc. #509-2). Therefore, the accused manner of operation is the Protocol's basic inventory process. EPCglobal is a standard setting organization that developed the Protocol as the industry standard for the production of radio frequency identification ("RFID") products.

The parties generally agree on how the Protocol's inventory process operates. The Protocol inventory process uses five commands: Query, QueryAdjust, QueryRep, ACK, and NAK. Id. at 42. The Query command initiates the inventory round and decides what tags will participate. Id. When the tag is powered up, it enters

the Ready state with its inventoried flag set to A ("Ready-A").

Id. §§ 6.3.2.4.1 and 6.3.2.2. When a tag receives a Query command, the tag chooses a random value for its slot counter (the "Q value"). Id. at 43. Tags selecting a zero Q value transition to the Reply state and reply to the reader immediately by backscattering a 16-bit random number ("RN16"), which helps the reader identify the tag. Id. Tags that pick a nonzero Q value transition to the Arbitrate state and wait for a QueryAdjust or QueryRep command. Id.

If only one tag replies, the Protocol describes the "query-response algorithm" as follows:

- a) The Tag backscatters an RN16 as it enters reply,
- b) The Interrogator acknowledges the Tag with an ACK containing this same RN16,
- c) The acknowledged Tag transitions to the acknowledged state, backscattering its PC, EPC, and CRC-16,
- d) The Interrogator issues a QueryAdjust or QueryRep, causing the identified Tag to invert its inventoried flag (i.e. A→B or B→A) and transition to ready, and potentially causing another Tag to initiate a query response dialog with the Interrogator, starting in step (a), above.

Id. at 43.

The Protocol's use of inventoried flags is critical to the parties' infringement arguments. Tags under the Protocol provide four sessions (S0, S1, S2, and S3). The Protocol § 6.3.2.2. Tags participate in one of these sessions during an inventory round. Id. Each session maintains an independent inventoried flag, which has two values: A and B. Id. Thus, the Protocol has four single-bit flags with two values each. Id. § 6.3.2.1.

Only the inventoried flag for the session used in the inventory round is modified during the round. Id. § 6.3.2.2.

At the beginning of an inventory round, the inventoried flag of the session is generally set to A. The inventory process then proceeds as described above. After the tag transitions to the Acknowledged state, it backscatters its permanent identifying information, such as its electronic product code ("EPC"), and is considered identified or "singulated." Id. § 6.3.2.8. Once the tag participating in the inventory round is singulated, the reader may issue a QueryRep or QueryAdjust command, which will cause the tag to transition back to the Ready state, invert its inventoried flag from A to B, and no longer participate in the inventory round. Id. §§ 6.3.2.2, 6.3.2.8. Intermec refers to this state as "Ready-B" or "Sleep" (doc. #546, at 3, 13).

The Protocol requires the inventoried flags have a set persistence time. The Protocol Table 6.15. This means that if the tag loses power during an inventory round, a tag that has inverted its inventoried flag from A to B will stay in B as long as the power outage does not last longer than the inventoried flag's persistence time. Id. § 6.3.2.2. If the power outage does last longer than the inventoried flag's persistence time, the tag's inventoried flag will default back to A. Intermec claims this feature infringes the '841 Patent (doc. #546, at 5). Alien argues its tags do not have state information or command executed in accordance with the state information (doc. #511, at 33-40).

ANALYSIS

Summary judgment is proper if, in drawing all reasonable inferences in favor of the non-moving party, there are no genuine issues of material fact and the moving party is entitled to judgment as a matter of law. Wavetronix LLC v. EIS Elec. Integrated Sys., 573 F.3d 1343, 1354 (Fed. Cir. 2009) (citing Fed. R. Civ. P. 56(c)). "A fact is 'material' if it may affect the outcome of the proceedings, and an issue of material fact is 'genuine' if the evidence is such that a reasonable jury could return a verdict for the non-moving party." Id. (citing Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248 (1986)). Summary judgment of non-infringement is appropriate "where the patent owner's proof is deficient in meeting an essential part of the legal standard for infringement, because such failure will render all other facts immaterial." TechSearch, LLC v. Intel Corp., 286 F.3d 1360, 1369 (Fed. Cir. 2002). "[S]ummary judgment is as appropriate in a patent case as in any other." Barmag Barmer Maschinenfabrik AG v. Murata Mach., Ltd., 731 F.2d 831, 835 (Fed. Cir. 1984). Thus, summary judgment may be granted when no "reasonable jury could return a verdict for the nonmoving party." Anderson, 477 U.S. at 248.

Patent infringement requires a two-step analysis: first, the court construes the accused patent claims for their proper scope and meaning; and second, the construed claims are compared to the allegedly infringing process. Tex. Instruments Inc. v. Cypress Semiconductor Corp., 90 F.3d 1558, 1563 (Fed. Cir. 1996). In

order to prove infringement under the second prong of this analysis, the patentee must show the accused process or device meets every element of the patent claim, either literally or through the doctrine of equivalents. Id. at 1563-64. Infringement is a question of fact. Bd. of Regents of the Univ. of Tex. Sys. v. BENO Am. Corp., 533 F.3d 1362, 1367 (Fed. Cir. 2008).

1. State Information

Intermec argues Alien's tags meet the "state information" and "state information defining a desired state of said RFID transponder" elements as construed by the Court. First, it argues the Protocol's QueryRep and QueryAdjust commands, through their command-identification bits, provide state information defining a desired state of the tag because it commands singulated tags (those that are identified and in the Acknowledged state) to transition from the Acknowledged state to the "Ready-B" state. As Intermec describes it, those commands tell the tag to, "Set the inventoried flag to 'B,' please" (doc. #546, at 14). Second, it argues the inventoried flag value itself, through its single bit, is state information maintained in a state holding cell during a loss of power because the inventoried flags have a persistence time so that if power is recovered during that persistence time, the tag will stay in Ready-B.

Alien makes two primary arguments that its tags do not meet the "state information" and "state information defining a desired

state of said RFID transponder" elements. First, it argues the "state information" Intermec identifies is actually in two different forms and, therefore, cannot satisfy the element under the "antecedent basis rule."² Second, it argues its tags do not meet these elements because the state information cannot "determine" the output of the digital state machine as the court construed the element.

The antecedent basis rule stands for the principle that claim terms using "the" or "said" are anaphoric phrases that refer back to the initial antecedent phrase. Baldwin Graphic Sys., Inc. v. Siebert, Inc., 512 F.3d 1338, 1343 (Fed. Cir. 2008); see also Process Control Corp. v. HydReclaim Corp., 190 F.3d 1350, 1356-57 (Fed. Cir. 1999) (analyzing antecedent and anaphoric claim terms while reviewing claim construction). Applying this principle, Alien argues the form or format of "state information" must be the same throughout the patent, rather than two distinct forms or formats as Intermec has alleged.

However, the Federal Circuit has held the antecedent basis rule is not an absolute principle. In Microprocessor Enhancement Corp. v. Tex. Instruments Inc., the Federal Circuit held that Process Control "did not announce a rule that the reference to an antecedent absolutely requires a term to be consistently

² Intermec has described this rule as the "antecedent basis rule," but the Court has not located any Federal Circuit cases dubbing the rule by this name. However, the Court will refer to the rule by this name because the name provides a clear description of the rule.

construed across uses.” 520 F.3d 1367, 1375 (Fed. Cir. 2008). The court concluded that unlike the claim term in Process Control, the claim term at issue in Microprocessor Enhancement was not surrounded by uniform language that required a single interpretation of the term. Id. at 1376 (citing Epcon Gas Sys., Inc. v. Bauer Compressors, Inc., 279 F.3d 1022, 1031 (Fed. Cir. 2002), which construed “substantially” as having two different meanings based on its use in “two contexts with a subtle but significant difference”).

Here, “state information” is used in several contexts. As stated in claim 1 of the ‘841 Patent, the second element teaches “said analog circuit providing state information defining a desired state of said RFID transponder corresponding to said analog signal[.]” ‘841 Patent 6:27-29. The third element teaches a “digital state machine coupled to said analog circuit and adapted to execute at least one command in accordance with said state information[.]” Id. 6:30-32. Finally, element six teaches “a state holding cell coupled to said digital state machine and being adapted to maintain said state information.” Id. 6:43-44. Thus, each element addresses a different component of the tag: the analog circuit, the digital state machine, and the state holding cell. Even though each of those components is linearly connected, “state information” is not surrounded by uniform language in every element that would mandate a common format under Process Control. Therefore, the Court cannot grant judgment as a matter of law on Alien’s antecedent basis argument.

Furthermore, Intermec notes the QueryRep and QueryAdjust commands and the inventoried flag value present the same state information ("Set the inventoried flag to 'B,' please") but in different formats. It argues this difference does not create any inconsistency and would be understood by one possessing the ordinary level of skill in the pertinent art. See Microprocessor Enhancement, 520 F.3d at 1376 n.5 (citing Energizer Holdings, Inc. v. Int'l Trade Comm'n, 435 F.3d 1366, 1370-71 (Fed. Cir. 2006) (the scope of a claim element may still be ascertainable to one skilled in the art despite the lack of an antecedent basis)).

The Court generally agrees the information relayed by the QueryRep and QueryAdjust commands and the inventoried flag value define the same state: Ready-B. The Court is unable to agree, as a matter of law, that the different formats presented meet the Court's construction of state information and, therefore, infringes the '841 patent. Infringement is a question of fact. Bd. of Regents of the Univ. of Tex. Sys., 533 F.3d at 1367. To find infringement as a matter of law, the Court must be able to conclude that no "reasonable jury could return a verdict for the nonmoving party." Anderson, 477 U.S. at 248. However, as Alien has argued, the "state information" on which Intermec relies is different. While the Court cannot conclude that the antecedent basis rule defeats Intermec's contentions as a matter of law, the question of whether each of the alleged state information formats meets the state information element as the Court has construed it must be answered by a jury.

Alien argues next that the state information on which Intermec relies does not "determine" the output of a digital state machine. The Court construed the phrase, "state information defining a desired state of said RFID transponder," to mean, "information obtained that determines the output of the digital state machine." (Doc. #466, at 38, emphasis added). Alien argues the state information, whether in the form of a command or inventoried flag value, cannot "determine" the output of a digital state machine because the response also depends on the present state of the tag and its slot-counter value. This is similar to Alien's arguments for non-infringement for the '318 and '852 Patents (doc. #511, at 36-37, comparing its argument to the '318 and '852 Patents). Intermec does not dispute the present state of the tag and the slot-counter value have some effect on how the tag responds to a command. Instead, it argues the tag's present state and slot-counter value do not change the fact that the alleged state information determines the output of the digital state machine because both formats of state information force the tag to invert its inventoried flag to B.

For the '318 and '852 patents, the fact that a Protocol command could not alone dictate the response of the tag required a conclusion that the Protocol and Alien's tags could not infringe the '318 and '852 Patents (doc. #804). This conclusion, however, does not follow through to the '841 Patent. The '318 and '852 Patents included a claim element that required all information necessary to process the command be included in the

command. The '841 Patent does not contain a similar limitation. Furthermore, as Intermec notes, a tag's response to a command will often differ depending on what state the tags are in when the command is received. The '841 Patent's specification contemplates this as well. '841 Patent 4:28-29 ("The state determines how a given command is executed by the RFID tag 10."). Therefore, the Court cannot hold as a matter of law that the command cannot determine the output of the digital state machine.

As discussed above, however, the Court cannot conclude as a matter of law that Alien's tags meets this element. The tags do use other information, specifically the present state of the tag and the tag's slot-counter value, to process the commands that dictate the output of a digital state machine. Whether this fact precludes infringement is also a question a jury must answer when it compares Alien's products to the Court's construction of the element. Whether Alien's tags includes state information that determines the output of the digital state machine, is a factual question. After reviewing the parties' arguments and supporting documents, this Court cannot conclude that a reasonable jury could not return a verdict of non-infringement. Therefore, summary judgement of infringement is inappropriate.

2. Command Elements

Alien also argues that no command within the Protocol's inventory system has the functionality referred in the '841 Patent's command element, requiring the tag's digital state machine "execute at least one command in accordance with said

state information." It argues the command must, "(i) be executed 'in accordance with' the state information referred to in the claim, (ii) store data in memory, and (iii) retrieve data from memory." (Doc. #511, at 38).

Intermec argues the Query command meets this element of the claim. It notes a tag that has executed a QueryRep command and transitioned to Ready-B will not execute a Query command, which Intermec contends is a command executed "in accordance with" the state information. This alleged state information is stored in the tag's state holding cell. Finally, Intermec notes that Alien's tags maintain a register memory location that store information regarding the current state of the tag. The tag will execute a command differently depending on the state saved in this memory.

Intermec has produced sufficient evidence to preclude summary judgment of non-infringement. Intermec has noted three functions of the tag allegedly meeting Alien's description of the functionality of the tag. Therefore, the Court cannot grant judgement of non-infringement.

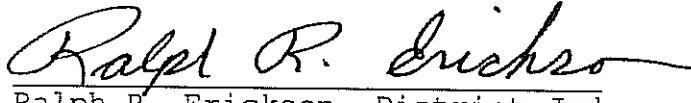
However, as with the state information elements, this Court cannot conclude that a reasonable jury could not return a verdict of non-infringement. Whether Intermec's comparison of Alien's tags to the '841 Patent proves infringement and whether the Query command meets the command claim element remain questions of fact for a jury. Therefore, the Court cannot grant summary judgment of infringement.

CONCLUSION

Both parties present compelling arguments, but neither has shown that it is entitled to judgment as a matter of law. Whether Alien's tags contain every element necessary to infringe claims 1, 9, and 21 of the '841 Patent remains a question of fact that a jury must ultimately decide. Therefore, Intermec's motion for summary judgment of infringement is **DENIED**, and Alien's motion for summary judgment of non-infringement is **DENIED**.

IT IS SO ORDERED.

Dated this 1st day of October, 2009.


Ralph R. Erickson
Ralph R. Erickson, District Judge
United States District Court